Visualization for propagation of long period wave in Kanto basin using array analysis.

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The basin structure beneath Kanto region is very complex, so 3D simulation is indispensable for a prediction of long period ground motion. The comparison among another of a direct comparison of shapes of waves in a specific observation point, respect maximum value distribution, and the response spectrum distribution has been used to verify the validity of the simulation. However, In a case of that PGV or a peak response is rulyd by the special phase, a simple comparison of PGV distribution is insufficient to verify the validity. At the 2004 Niigata Chuetsu earthquake, a wave packet with very large amplitude, which is thought as a surface wave, is observed in the Kanto region. The phase decide a large velocity response with 5% attenuation. To improve the accuracy of seismic damage prediction, it is necessary to construct the model by whom this phase can be reproduced. But an 1-D model extract fromrecent 3D models (e.g. Tanaka(2005)) can not explain the occurence of the large phase. It is helpful for estimating a propagation of such phase in a 3D structure to compare the simulation result and the observed wave using not only an amplitude of wave as a scalar but also the direction and the velocity of propagation, and direction of the vibration as a vector field.

We visualized the propagation direction and the phase velocity distribution of wave field from the observed seismograms by using array analysis, and estimate the validity of 3D simulation results. K-NET, KiK-net, and SK-net stations in the Kanto basin are used for the array analysis. We test three array analysis techniques, semblance method, Capon beamforming method, and MUSIC method. Semblance method is relatively practicable because Capon beamforming and MUSIC have high resolution but their beam powers are not so stable. We will present the example of the visualization of wavefield by the 2004 Kii peninsula SE off earthquake in the 2004 Niigata Chuetsu earthquake.